CANCER IN VERMONT

Executive Summary

In Vermont, cancer is the second leading cause of death, with approximately 1,240 people dying from cancer each year. For the past 40 years, the three leading causes of death in Vermont have been heart disease, cancer, and stroke. Unlike the death rates for heart disease and stroke, the death rate for cancer has risen steadily over the last few decades. Roughly one out of every two men and one out of every three women will develop cancer in their lifetime.

> By monitoring cancer in Vermont, we can become better informed of progress towards preventing and treating cancer, and ultimately, reduce illness and death from cancer.

- Each year an average of 3,064 new cases of cancer are diagnosed among Vermonters, and 1,236 people die from cancer.
- On average, 1,554 new cases of cancer are diagnosed each year among Vermont men. The most common cancers diagnosed in men are prostate, lung, colorectal, bladder and melanoma, and account for 68 percent of all new cases.
- The Vermont male cancer incidence rate of all sites combined is not different than the U.S. Vermont men have a higher incidence than the U.S. for lung cancer and melanoma.
- On average, 1,509 new cases of cancer are diagnosed each year among Vermont women. The most common cancers diagnosed in women are breast, colorectal, lung, uterine and melanoma, and account for 67 percent of all new cases. Vermont women have a higher incidence than the U.S. for colorectal, uterine, melanoma, bladder, and cervical cancer. The Vermont female incidence rate of all cancer sites combined is higher than the U.S.
- Vermont's colorectal cancer incidence rate for both genders combined is higher than the U.S. rate. Finding and removing polyps, by receiving the recommended screening, may prevent colorectal cancer. Only 59 percent of Vermont adults aged 50 and over have been screened for colorectal cancer, either with an FOBT in the past year or sigmoidoscopy or colonoscopy within the past five years. Only one-third of colorectal cancers are diagnosed at an early stage.
- While the incidence of lung cancer has decreased in the United States for both men and women between 1997 and 2001, there has been no significant decrease in lung cancer incidence in Vermont during that same time period. Lung cancer continues to be the leading cause of cancer death for both men and women. The single most effective way to prevent lung cancer is to never start smoking. The second is to quit.
- Breast cancer is the most commonly diagnosed cancer in women. Vermont's breast cancer incidence and mortality rates are not different from the U.S. Early detection through mammography and clinical breast exam can save

lives. Over 60 percent of breast cancers in Vermont are diagnosed at an early stage, when treatment is most likely to be successful.

- Prostate cancer is the most commonly diagnosed cancer in men. Vermont's prostate cancer incidence and mortality rates are not different from the U.S. Currently, medical experts do not agree on recommendations for regular screening for prostate cancer. Men should talk with their doctors about the pros and cons for being tested for prostate cancer.
- Melanoma incidence rates for Vermont men and women are higher than the U.S. white rates. Reducing exposure to ultraviolet (UV) radiation, such as from the sun and tanning booths, can reduce the risk of skin cancer. Protective measures from sun exposure include using a sunscreen with SPF 15 or higher, staying in the shade and/or wearing protective clothing on a sunny day, and avoiding tanning beds.
- Vermont's cervical cancer incidence rate is higher than the U.S. Cervical cancer is preventable by treatment of precancerous lesions found by screening. With 48 percent of cervical cancers seen on or after age 50, it is important for women to continue with Pap test screening even after menopause.

Any disease in which abnormal cells develop, divide, grow, and have the potential to spread throughout the body can be called cancer. If the spread of these cancer cells is not controlled, death may result.

Cancer cells from a malignant tumor can invade nearby tissues either by direct growth into adjacent tissue or by migration through the bloodstream and lymphatic system to other parts of the body. This process is called metastasis. For example, cancer that started in the colon and spread to the liver is still colon cancer. Similarly, breast cancer that has spread to the bone is not bone cancer, it is metastatic breast cancer. Benign tumors are not cancer because they do not metastasize.

Cancer Sites

Cancers are defined by the cells in which they originate, and are termed carcinoma, sarcoma, lymphoma, or leukemia. Carcinoma is the most common type of cancer and arises from the cells that cover external and internal body surfaces. After non-melanoma skin cancers, the most frequent carcinomas in the U.S. are of the lung, breast, and colon. Sarcomas are cancers which arise from cells found in the supporting tissues of the body, such as bone, cartilage, fat, connective tissue, and muscle. Lymphomas are cancers that arise in the lymph nodes and tissues of the body's immune system. Leukemias are cancers of the immature blood cells that grow in the bone marrow and tend to accumulate in large numbers in the bloodstream.

Stage

Stage describes the extent to which the cancerous cells have spread from the original site to another part of the body. Stage can be grouped into the following categories: in situ, localized, regional, distant, and unknown.

CANCER STAGE DEFINITIONS:

In situ - Also known as "non-invasive."Cancer cells are present, but the tumor has not invaded the supporting structure of the organ on which it arose.

Localized - A tumor limited to the organ of origin. The cancer has gone through the basement membrane of the organ, but there is no spread beyond the boundaries of the organ.

Regional - The tumor has extended beyond the limits of the organ of origin, and there is potential for spread by lymph nodes or the blood supply. Regional stage cancers directly extend beyond the primary site, involve regional lymph nodes, or both.

Distant - Distant metastases are tumor cells that have broken away from the primary tumor, have traveled to other parts of the body, and have begun to grow at the new location. Common sites of distant spread are liver, lung, brain and bones. These organs receive blood flow from all parts of the body and thus are a target for distant metastases.

Unknown - There is not enough information to categorize a cancer into any of the above stages.

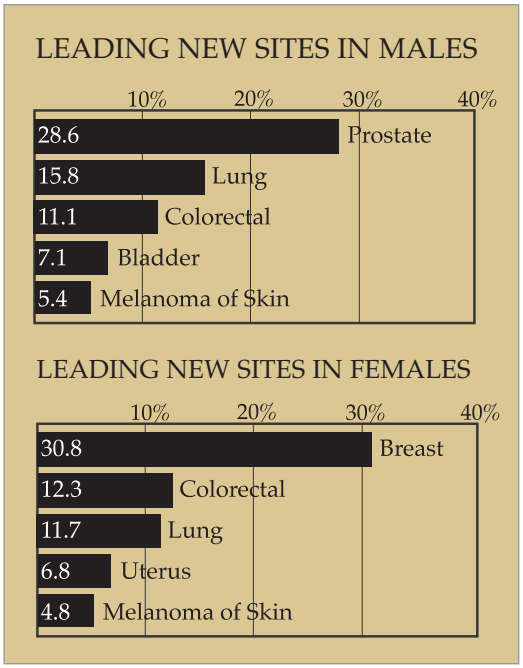
Physicians determine the stage of a cancer at the time of diagnosis. Knowing the stage of the cancer helps patients better understand their prognosis and make treatment decisions. For some cancers, diagnosis at an earlier stage can increase a person's chance of survival. For instance, people diagnosed with colorectal cancer at a localized stage have a 90 percent 5-year survival rate, meaning they survive their colorectal cancers for at least five years. People diagnosed with distant stage colorectal cancer have a 10 percent 5-year survival rate.

Risk Factors

A risk factor is a condition, an activity or an exposure that increases a person's chance of developing cancer. Cancer develops gradually as a result of a complex mix of factors related to lifestyle choices, environment and genetics. Each type of cancer is caused by a different set of factors, some well established, some uncertain, and some unknown.

In many cases, the exact cause of cancer is unknown, and researchers continue to study how and why normal cellular growth becomes uncontrolled. Nearly two-thirds of cancer deaths in the U.S. can be linked to tobacco use, poor diet, obesity, and lack of exercise. Although not all types of cancers are preventable, the risk for many can be reduced by not smoking, being physically active, and eating a diet low in fat and calories and high in fiber. These healthy lifestyle choices also significantly reduce the risk of other chronic diseases, such as heart disease and diabetes.

Approximately one-third of cancer deaths in the U.S. are either due to unknown causes or are associated with other risk factors that are difficult or impossible to change, such as occupational factors, family history of cancer, viruses/other biologic agents, hormonal factors, and environmental pollution.



Diet and Physical Activity

> As many as one-third of the cancer deaths in the U.S. may be due to unhealthy diet and lack of physical activity.

A poor diet can lead to obesity which is known to increase a person's risk for breast, colon, endometrium, esophagus, and kidney cancers. It is recommended that people eat at least 2 servings of fruit daily and at least 3 servings of

vegetables daily. One Healthy Vermonters 2010 Objective is to increase the percentage of Vermonters who eat two or more servings of fruit per day. Another Healthy Vermonters 2010 Objective is to increase the percentage of Vermonters who eat three or more servings of vegetables per day. In 2003, 47 percent of Vermont adults reported eating the recommended serving of fruit (Goal: 75 percent), and 44 percent reported eating the recommended serving of vegetables (Goal: 50 percent).

Physical activity not only helps to maintain a person's weight but influences hormone levels. The recommendation for exercise is 30 minutes a day, 5 days a week or more for adults. It has been found that more exercise is beneficial in reducing risk of breast and colon cancer. The Healthy Vermonters 2010 Objective is to increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day. In 2003, 55 percent of Vermont adults reported engaging in moderate physical activity (Goal: 50 percent).

Tobacco

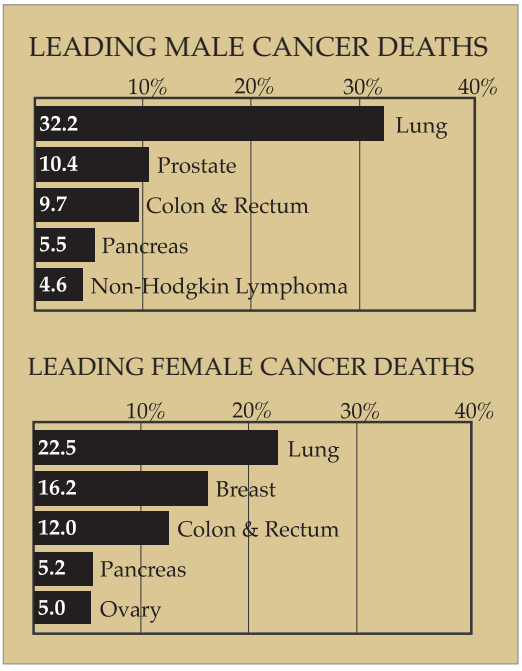
Smoking tobacco in any form is the major cause of lung cancer, the leading cause of cancer in both genders combined.

> An estimated 30 percent of cancer deaths in the U.S. each year are attributable to exposure to the carcinogens in tobacco products.

The more a person smokes, the more they increase their risk of developing lung cancer. People who smoke 2 packs or more per day are nearly 20 times more likely to develop cancer than non-smokers. People who don't smoke, but who breathe secondhand smoke, or environmental tobacco smoke, have a higher risk of lung cancer.

Alcohol

People who have more than two alcoholic drinks per day have an increased risk of cancer, especially in those who also smoke. Heavy drinking is linked to cancers of the mouth, throat, esophagus, larynx (voice box), liver, and breast. The risk of cancer of the mouth, larynx, and esophagus is further intensified by smokers who also drink more than two drinks per day. In 2003, 3 percent of



Vermont adult female smokers reported also drinking more than two drinks per day, and 5 percent of Vermont adult male smokers reported also drinking more than two drinks per day.

Race and Ethnicity

Cancer rates can vary by race and ethnicity. Although the causes of this are largely unknown, socioeconomic factors are probably more important than biological or inherited characteristics in explaining differences in cancer risk among the major racial and ethnic populations in the U.S. Cigarette smoking, physical inactivity and obesity vary by race/ethnicity and socioeconomic status. Rates of use of recommended screening tests and stage at diagnosis also vary by race and ethnicity.

Examples of how cancer rates differ among people according to their race and ethnicity:

- Among black women, incidence rates for lung, breast, uterine and bladder cancers are lower than rates for white women.
- Mortality rates are higher among black women for uterine and bladder cancers.
- Prostate cancer incidence rates are higher among black men than among white men.
- Hispanic Americans have a higher rate of cervical cancer than the U.S. non-Hispanic population.
- American Indians experience lower cancer incidence rates compared to whites for all sites combined, especially cancers of the oral cavity, colon and rectum, pancreas, lung, breast, uterus, prostate, bladder, melanoma and most leukemias and lymphomas.

MALE CANCER INCIDENCE, 1997-2001

Site	U.S. SEER Rate per 100,000	VT Rate per 100,000	VT Cases (per year)
Prostate	171.2	164.5 *(157.7, 171.1)*	445
Lung	82.3	92.8 *(87.6, 98.3)*✗	245
Colon and Rectum	64.4	67.0 *(62.5, 71.7)*	173
Bladder	41.2	43.6 *(39.9, 47.5)*	110
Melanoma of the Skin	26.3	30.1 *(27.2, 33.2)*✗	84
Non-Hodgkin Lymphoma	24.5	23.2 *(20.7, 26.0)*	63
Leukemia	17.0	17.7 *(15.5, 20.3)*	47
Kidney	16.5	16.3 *(14.2, 18.6)*	45
Oral Cavity and Throat	15.9	14.9 *(12.9, 17.1)*	42
Pancreas	12.6	13.3 *(11.4, 15.5)*	35
Stomach	10.2	8.9 *(7.4, 10.8)*	24
Brain and Nervous System	8.8	8.3 *(6.8, 10.0)*	24
Esophagus	8.1	9.6 *(8.0, 11.5)*	26
Larynx	6.8	7.9 *(6.4, 9.6)*	22
Myeloma	6.7	5.8 *(4.5, 7.3)*	15
Liver	6.7	5.6 *(4.4, 7.1)*	15
Testis	6.5	7.8 *(6.4, 9.4)*	23
Thyroid	4.1	3.6 *(2.7, 4.8)*	11
Hodgkin Lymphoma	3.3	3.4 *(2.5, 4.6)*	10
All Sites Combined	568.3	580.9 *(567.8, 594.2)*	1,554

★ statistically lower than the U.S. SEER white rate
✗ statistically higher than the U.S. SEER white rate
Vermont rates are based on data from 1997-2001. All rates are age-adjusted to the 2000 U.S. standard population and exclude basal cell and squamous cell skin cancers and in situ carcinomas except urinary bladder. Rates based on 5 or fewer cases are not individually calculated. U.S. Rates are 1997-2001 SEER 9 Registries white population incidence rates.

- American Indians have higher incidence of gallbladder, stomach and cervical cancer than whites.

Age and Gender

Cancer occurs in people of all ages, however, the risk of cancer increases with age. In Vermont:

- people under the age of 20 represent about percent of newly diagnosed cases
- 20-49 year olds represent 15 percent
- 50-64 year olds represent 28 percent
- 65-74 year olds represent 27 percent
- 75 year olds and older represent nearly 30 percent of newly diagnosed cases.

Prevention

Although not all cancers can be prevented, many risk factors relating to lifestyle could be reduced by making healthy choices. For instance, smoking cessation reduces the risk for lung cancer, and using sunscreens to limit exposure to the sun reduces the risk of skin cancer. Improving physical activity and nutrition could help reduce the risk of certain types of cancer, as well as other chronic diseases.

Screening and Early Detection

Many cancers can be treated quickly and effectively if they are detected and treated in early stages. Regular visits to a health-care provider can help maintain good health, guide healthy lifestyle choices, and look for signs and symptoms of various health conditions, including cancer.

FEMALE CANCER INCIDENCE, 1997-2001

Site	U.S. SEER Rate per 100,000	VT Rate per 100,000	VT Cases (per year)
Breast	143.2	138.6 *(133.0, 144.4)*	465
Lung	53.5	52.3 *(48.9, 55.9)*	176
Colon and Rectum	46.8	53.1 *(49.7, 56.6)* ✗	186
Uterus	26.6	30.8 *(28.1, 33.6)* ✗	103
Melanoma of the Skin	18.1	22.5 *(20.3, 25.0)* ✗	73
Non-Hodgkin Lymphoma	16.9	18.6 *(16.6, 20.8)*	63
Ovary	15.0	14.2 *(12.4, 16.2)*	48
Thyroid	11.1	10.1 *(8.6, 11.8)*	32
Bladder	10.2	12.6 *(11.0, 14.4)* ✗	44
Leukemia	10.1	9.8 *(8.3, 11.4)*	33
Pancreas	9.5	9.4 *(8.0, 11.0)*	33
Kidney	8.2	7.9 *(6.6, 9.4)*	27
Cervix	7.8	9.7 *(8.2, 11.3)* ✗	31
Oral Cavity and Throat	6.6	5.9 *(4.8, 7.2)*	20
Brain and Nervous System	6.1	5.1 *(4.1, 6.4)*	17
Stomach	4.5	3.6 *(2.8, 4.6)*	13
Myeloma	4.2	2.9 *(2.2, 3.9)* ★	10
Hodgkin Lymphoma	2.7	3.3 *(2.5, 4.4)*	10
Liver	2.6	1.7 *(1.2, 2.5)* ★	6
Esophagus	2.0	2.7 *(1.9, 3.6)*	9
Larynx	1.5	1.9 *(1.3, 2.7)*	6
All Sites Combined	435.1	446.8 *(436.7, 457.0)*	1,509

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There are screening tests that can detect certain types of cancers at an early stage, such as mammograms for breast cancer, Pap tests for cervical cancer, and fecal occult blood tests, sigmoidoscopies and colonoscopies for colorectal cancer.

Treatment

Cancer treatment depends on the type and location of the cancer, the stage of the disease, the patient's age and general health, and other factors. Treatment decisions involve a team of specialists, which may include a medical oncologist, surgeon, radiation oncologist, nurse, nutritionist and social worker. Cancer may be treated with surgery, radiation, chemotherapy, hormones, and immunotherapy. Working together, healthcare providers and people diagnosed with cancer may decide to use a single treatment method or a combination of methods.

Survival

One way to measure treatment success is by survival, or how long a person lives after being diagnosed with cancer. A five-year relative cancer survival rate is the proportion of patients surviving cancer five years after their diagnosis (after adjusting for normal life expectancy). The survival rate includes those who are disease-free, in remission, or under treatment.

Medical advances in the way cancer is diagnosed and treated has improved survival rates of many cancers, and people are living longer after diagnosis. The most recent U.S. estimate shows that for people diagnosed with cancer (all sites) from 1995 through 2000, 66 percent survived cancer after five years compared with a 61 percent 5-year survival rate for people diagnosed with cancer from 1989 through 1994.

MALE CANCER MORTALITY, 1997-2001

Site	U.S. Rate *per 100,000*	VT Rate *per 100,000*	VT Deaths *per year*
Lung	76.2	78.2 *(73.4, 83.4)*	205
Prostate	28.9	30.4 *(27.1, 34.0)*	66
Colon and Rectum	24.6	25.7 *(22.8, 28.9)*	62
Pancreas	12.0	13.5 *(11.5, 15.7)*	35
Non-Hodgkin Lymphoma	10.8	11.5 *(9.7, 13.6)*	29
Leukemia	10.4	11.0 *(9.2, 13.1)*	27
Bladder	7.9	8.3 *(6.7, 10.3)*	19
Esophagus	7.4	7.9 *(6.4, 9.7)*	21
Kidney	6.2	7.1 *(5.7, 8.8)*	19
Brain and Nervous System	5.9	5.4 *(4.2, 6.9)*	15
Stomach	5.8	5.1 *(2.9, 6.6)*	13
Liver	6.0	4.9 *(3.8, 6.4)*	13
Melanoma of the Skin	4.3	4.8 *(3.7, 6.2)*	13
Myeloma	4.6	3.9 *(2.9, 5.3)*	10
Oral Cavity and Throat	3.9	3.8 *(2.8, 5.2)*	10
Larynx	2.3	2.5 *(1.7, 3.6)*	7
Thyroid	0.5	0.6 *(0.3, 1.2)*	2
Testis	0.3	--	--
Hodgkin Lymphoma	0.6	--	--
All Sites Combined	245.9	253.3 *(244.4, 262.5)*	636

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Uses of Cancer Data

> Cancer registry data can help identify specific populations that could benefit from increased education and access to cancer prevention and screening.

Public health officials use cancer registry data to guide cancer prevention and control programs that are focused on preventing risk behaviors for cancer. The data can be used in clinical, epidemiologic and health services research.

Surveillance

Cancer surveillance is the systematic collection, analysis and interpretation of cancer data. The goal of cancer surveillance is to improve our understanding of the prevention and treatment of cancer, and ultimately, to reduce illness and death from cancer.

Cancer registries at the local, state and national level collect and analyze data on the diagnosis, stage, and treatment of cancer. The Vermont Cancer Registry is Vermont's statewide population-based cancer surveillance system. The registry collects information about all cancers diagnosed in Vermont (except non-melanoma skin cancers and carcinoma in situ of the cervix).

Operated by the Vermont Department of Health, the Vermont Cancer Registry is part of a national effort to gain a better understanding of cancer in the

FEMALE CANCER MORTALITY, 1997-2001

Site	U.S. Rate *per 100,000*	VT Rate *per 100,000*	VT Deaths *per year*
Lung	41.5	39.4 *(36.4, 42.5)*	135
Breast	26.5	27.7 *(25.3, 30.4)*	97
Colon and Rectum	17.2	19.9 *(17.9, 22.1)* ✗	72
Pancreas	9.0	8.9 *(7.5, 10.5)*	31
Ovary	9.2	8.5 *(7.2, 10.1)*	30
Non-Hodgkin Lymphoma	7.1	7.7 *(6.5, 9.2)*	27
Leukemia	6.0	5.7 *(4.7, 7.1)*	20
Uterus	3.9	5.0 *(4.0, 6.3)* ✗	18
Bladder	2.3	3.5 *(2.7, 4.6)* ✗	13
Brain and Nervous System	4.0	3.5 *(2.7, 4.6)*	12
Myeloma	3.1	3.3 *(2.5, 4.3)*	12
Cervix	2.6	3.0 *(2.2, 4.0)*	10
Stomach	2.8	2.5 *(1.8, 3.4)*	9
Esophagus	1.7	2.1 *(1.5, 2.9)*	8
Kidney	2.8	2.1 *(1.4, 2.9)*	7
Liver	2.7	2.0 *(1.4, 2.8)*	7
Melanoma of the Skin	2.0	1.6 *(1.1, 2.4)*	6
Oral Cavity and Throat	1.6	1.6 *(1.0, 2.4)*	6
Hodgkin Lymphoma	0.4	0.5 *(0.2, 1.0)*	2
Larynx	0.5	0.5 *(0.2, 1.0)*	2
Thyroid	0.5	0.5 *(0.2, 1.0)*	2
All Sites Combined	166.6	171.4 *(165.3, 177.7)*	600

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population. The goals of the registry are to:

- Determine the incidence of cancer in the Vermont population
- Monitor cancer incidence and mortality trends among state residents
- Identify high risk populations
- Report findings to health care professionals and the public
- Contribute data for cancer prevention, control and treatment programs.

Concerns about Elevated Rates

When people observe a number of cases of cancer in their neighborhood, community or workplace, concerns often arise about what is causing the cancers, and if there is some exposure that is resulting in an increased risk for others to develop cancer. A cancer cluster is the occurrence of more cancers in a particular geographic area than would normally be expected within a certain a period of time.

Only an estimated four percent of cancer deaths can be attributed to environmental pollution or radiation. In contrast, almost two-thirds of cancer death in the U.S. can be linked to tobacco use, poor diet, obesity and lack of exercise. Most geographic differences in cancer rates appear to result from behavioral differences or differences in lifestyle, not from anything in a person's physical surroundings or from environmental pollution.

With 9 percent of people age 50 and over living with cancer in the U.S., it is not unusual to know several people who have cancer. As a population ages, the occurrence of new cancer cases is expected to increase. With treatment advances, people are living longer with a cancer diagnosis; the number of cancer survivors has doubled in the past 20 years.

Because a variety of factors often work together to create the appearance of a cluster where nothing abnormal is occurring, most reports of suspected cancer clusters are not shown to be true clusters. A suspected cancer cluster is more likely to be a true cluster if it involves a large number of cases of one type of cancer, rather than several different types; a rare type of cancer; or an increased number of cases of a certain type of cancer in an age group not usually affected by that type of cancer.

Vermonters Taking Action Against Cancer (Vermont Cancer Coalition)

> Opportunities to reduce the burden of cancer exist all along the continuum of care from prevention, early detection (screening), diagnosis, treatment, surviving cancer, pain management and end-of-life care.

Comprehensive Cancer Control is an integrated, collaborative approach to reducing the burden of cancer in

Vermont by coordinating priorities, resources and efforts. The Vermonters Taking Action Against Cancer (VTAAC) is a statewide partnership of more than 140 organizations, individuals and healthcare professionals working together to reduce the incidence, suffering and deaths related to cancer among all Vermonters.

Goals of the VTAAC are:

- Prevent future cancers by reducing exposure to known risk factors.
- Detect new cancers as early as possible through appropriate screening.
- Increase access to high quality cancer treatment and follow-up care.
- Improve the quality of life for people living with, through and beyond cancer.
- Improve end-of-life care for cancer patients.

FOR MORE INFORMATION about Vermonters Taking Action Against Cancer, or to join in this statewide effort, please call (802) 865-7706 or visit www.HealthyVermonters.info/cancer